

CONFIGURATION AND FABRICATION OF  
SEMICONDUCTOR STRUCTURE HAVING  
N-CHANNEL CHANNEL-JUNCTION FIELD-EFFECT TRANSISTOR

By

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ABSTRACT

A semiconductor technology combines a normally off n-channel channel-junction insulated-gate field-effect transistor ("IGFET") (104) and an n-channel surface-channel IGFET (100 or 160) to reduce low-frequency  $1/f$  noise. The channel-junction IGFET is normally of greater gate dielectric thickness than the surface-channel IGFET so that the channel-junction IGFET operates across a greater voltage range than the surface-channel IGFET. A p-channel surface-channel IGFET (102 or 162), which is typically of approximately the same gate-dielectric thickness as the n-channel surface-channel IGFET, is preferably combined with the two n-channel IGFETs to produce a complementary-IGFET structure. A further p-channel IGFET (106, 180, 184, or 192), which is typically of approximately the same gate dielectric thickness as the n-channel channel-junction IGFET, is also preferably included. The further p-channel IGFET can be a surface-channel or channel-junction device.

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